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Journal Articles: Multimedia Composing: Extending the Resources of Kindergarten to Writers Across the Grades, by Colette Daiute.

You've become so focused! So early!

Alas, the search for the holy grail of epistemology has finally derailed.¹ But as a kind of connecting article between that "research" and my special project I picked up this interesting article on using technology to help problem writers (if it's not "epistemology" it's gotta be computers---with a little writing thrown in for good measure).

In the course of her research Daiute asks a very important question:

What connection can you make to education?

We wanted to find out whether multimedia composing supported children's text composing or simply diverted them from writing and how children used diverse media as sources of knowledge and expression. (p. 255)

It's often the case in business that computerization is implemented and only later it's discovered that the actual gains are of an "accounting/management" variety and have very little to do with the actual job. In education this is a luxury that we cannot afford. Within the parameters of Daiute's experiment it would seem that they were successful. It is important, however, to clearly understand the limitations and implications of this study.

First, there was a clear, detailed, focus purpose and unit plan. They had a specific group of students, they had the support personnel, they had a specific project in mind (two-month simulation of an archeological dig and creation of a museum), they

¹Gone, but certainly not forgotten---I'm definitely thinking long term with this one. JBB

Solicit
grant
funds
when
you're a
teacher

had the hardware and the software (not too surprisingly Apple Computer contributed "support" for this project). Creativity depends on sufficient and appropriate support structures and Daiute provided these for her students.

Second, Daiute utilized the technology to support the belief in social/cultural connectedness in the classroom. It was not technology in a vacuum but was used to specifically bring the home and the neighborhood into the classroom. Now if we could just ensure that all primary classrooms had access to Macs with scanners, CD-ROMs, stereo-speakers and laser printers (right!).

I'm still not
convinced that
there's "no money."
I think a lot is
just poorly spent

MULTIMEDIA COMPOSING: EXTENDING THE RESOURCES OF KINDERGARTEN TO WRITERS ACROSS THE GRADES

COLETTE DAIUTE

Composing with images and sounds, as well as with words, opens new opportunities for children in their "writing."

Many children who cannot read or write well by the time they are in the fourth grade are good at learning from visual and aural sources in contexts that are meaningful to them. Images and sounds can provide children with cultural, social, and emotional information in forms that are readily accessible to them. But, after the primary grades, children's work in school relies mostly on their abilities to work with text. Language arts teachers, reading and writing specialists, and English teachers are charged with the sometimes awesome responsibility of helping children gather information and express themselves in textual form as they advance through the grades, and visual media are often considered to be the enemies of literacy. Yet, it is worth exploring the role that visual and other media can play in supporting children's literacy development. Recent developments in technology make it possible to integrate images, sounds, and text in multimedia computer environments that also provide tools for transforming these various symbol systems. Being able to "read" and "write" with several media in an integrated work space can help children ground their literacy and learning in familiar contexts. Such multimedia composing is also possi-

ble without high technology, as the work in many kindergartens illustrates, but technology may make a multimedia approach effective for children in the upper grades.

Resources for Literacy Development

Teaching her students to read and write patterns, a kindergarten teacher tells them, "You can read that pattern—square, triangle, square, triangle. See, you did it! If you can read a pattern like that, you can read a book or write a story." (L. Field, personal communication, 1991). This teacher guides her students in building their literacy skills on familiar symbol systems of pictures and shapes. Similarly, children in the primary grades are invited to express themselves through drawing, movement, and play as the basis of their emergent literacy skills (Teale & Sulzby, 1986). When the words don't come, a picture is an acceptable substitute or prewriting activity. A conversation, like a picture, is another resource for writing when a teacher talks with a child about her pet going to the hospital and then guides the child in writing about this experience (Graves, 1982). Young peers also use oral language and action to support each other's literacy development, as did two boys who created a mock volcanic eruption through sound effects, punctuating these sound effects with a story, pictures, and eventually a few written words (Daiute, 1990; Dyson, 1989). Many kindergarten teachers encourage their students to use such visual and aural resources as the basis for literacy activities; but by the third or fourth grade, children no longer have immediate access to pictures or sounds as sources of information, prewriting, or expression.

This paper is based on another report written with Frances Morse (Daiute & Morse, in press). The research was supported by Harvard University and Apple Computer, Inc.

As children progress through the grades, their work is increasingly done in one medium—text. Children are expected to have learned how to carry out the functions of images, sounds, conversations, and performances with written words. They do much of their research in the textual mode. And they have to express their knowledge in writing. Although some children make a seemingly effortless transition from writing in the context of drawing to writing that stands on its own, others have great difficulty using written language to express their ideas or to learn about other people's ideas. The children who have the most trouble making this transition are often those whose cultural and linguistic backgrounds differ from

While learning to read and write text is a major goal of the school years, some children may be seriously disadvantaged by not having access to other media as bridges to text.

those of the school (Applebee, Langer, Mullis, & Jenkins, 1990), presumably because the language, materials, and methods of classrooms are unfamiliar to them. While learning to read and write text is a major goal of the school years, some children may be seriously disadvantaged by not having access to other media as bridges to text. For many children, the distance between the school world and their own inner resources is too vast. For some children, the information processing burdens of creating ideas and transcribing them into text are great. Many of these children who have difficulty making the transition from multimedia composing to monomedia composing wind up receiving remedial education.

Many children who have been identified as having reading, writing, and language difficulties receive help addressing their weaknesses, thus offering them a second chance to learn skills they have missed and guiding them in developing strategies to overcome their disabilities. Unfortunately, writing instruction targeted to weaknesses tends to engage children in drills on spelling or grammar that can distance them from the resources they need most—context and nontextual media to support the writing process. A common

observation like “This student does work well in the resource room, but the skills developed there do not transfer to class” indicates that intense focus on the child's disabilities can become a problem. A challenge in teaching children who have difficulties reading and writing is to make their strengths as much as their weaknesses the basis of instruction. Since many of the children who receive remedial services are from linguistic and racial minority groups (Singer & Butler, 1987), cultural resources are not obviously being tapped. In addition to cultural resources, children may have strengths with nontextual media, including the visual media of pictures, television, and video games; the aural media of music and sound effects; and the living media of social interaction and talk.

In this paper, I draw on recent research to argue that children who have difficulties learning to write can benefit from resources like the ones they had in kindergarten, when most of them were successful as students. Many children who have difficulties with text work well with pictures, sounds, and oral language—resources that should be built into their writing instruction. Such an approach involves shifting remedial work with poor writers from exclusive drills on their weak skills to work with their strong skills—like capturing information from their cultures in images and sounds.

Bringing Children's Worlds into the Classroom

Learning to use written language involves developing linguistic and cognitive skills like phonemic awareness, literate vocabulary, and pronoun-referencing systems. But it has recently become clear that developing written language skills involves social and cultural factors as well. A child's culture of origin instills patterns of thought and expression, which in some cases are at odds with those of the school (Cazden, 1988; Heath, 1983). Children from some African American communities in North Carolina, for example, learn at home to tell stories that entertain rather than stick to facts (Heath, 1983). Children in certain Hawaiian groups are reared to tell collaborative stories (Au, 1980). In addition, children from some groups in the United States learn that literacy holds no promise for them and that participating in literacy might alienate them from their peer culture (Ogbu, 1985). Children reared in these ways of using language often have diffi-

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culties with school-based literacy built on different discourse forms, such as reporting the facts in expository form (Cazden, 1988; Delpit, 1988).

Social interaction patterns also have an impact on literacy development. Mother/child interactions around early storybook reading influence children's understandings about the functions and forms of print (Heath, 1983; Snow & Ninio, 1986). And teacher/student interaction determines specific literacy skills such as vocabulary development (Snow, 1991), text organization skills (Daiute & Dalton, in press), and written fluency (Daiute, 1990). When children have the opportunity to use spontaneous interaction styles like play as they compose text, they learn to develop their ideas and to internalize structures that had been the focus of their play (Daiute, 1990). Such social interaction patterns differ across families and classrooms, but certain types of interaction patterns like relating texts to personal experience predict success in school-based literacy. For example, one study found that families with resilient, "can-do" attitudes and organized lifestyles tend to have children who are good writers (Snow, Barnes, Chandler, Goodman, & Hemphill, 1991). Such families appear to offer their children models of social engagement and strategies for approaching effortful tasks like writing. Some children become engaged in school work only when it relates to their own interests.

Once show-and-tell has disappeared from the classroom routine, children's personal cultures tend not to be invited into the classroom as a basis for reflection and growth. Although children as young as 4 enthusiastically develop solidarity around Teenage Mutant Ninja Turtles, Barbie dolls, Nintendo games, and later around sports figures, musical artists, or popular slang, these foci are typically shunned in the classroom. Adults tend to negate the value of such cultural symbols because they appear to be offensive, anti-intellectual, disrespectful, or simply distracting. Yet, preadolescent children are intensely involved with their peers and the development of their own identities in relation to their peer culture. Such peer culture is often seen as a distraction, but it may have some influence on children's intellectual development. In addition, peer cultures are also sources of motivation, expression, and learning (Fiske, 1989; Willis, 1990). Children's seemingly irrational and conformist interest in certain musical styles, modes of dress,

or television programs serve as reference points. Most importantly, children infuse these symbols with their own meanings, thus creating new cultural symbols out of those developed by advertisers, musicians, and other spawners of popular culture. If children are to be able to think and write critically about school subject matter, current events, and ideas in their professions or civic life, they must ground themselves in a culture and point of view. They need a firm basis from which to critique as well as to create ideas.

Some children who find reference points in the classroom may thrive even though they leave their music and skateboards at home, but other children need such symbols to make connections to school. Often a child who seems to have no discipline for learning to read and write has an intense interest in some peer culture phenomenon

A challenge in teaching children who have difficulties reading and writing is to make their strengths as much as their weaknesses the basis of instruction.

like video games or sports. The value of such interests as a bridge to writing skills is worth exploring. When children have access to cultural media reflected in images, sounds, and talk, they have access to concrete, personally relevant material as the basis for expository writing. Such material may be especially helpful to children who cannot write from their memories of experience. Personal media may be springboards for literacy development and pathways into content curricula.

Currently there is considerable energy and debate devoted to designing multicultural curricula that can provide political and cognitive bases for children's literacy development. New curricula propose changes in the content of social studies and literature and the nature of talk and writing done around these contents in school. Some proposals shift from curricula based solely in Western European knowledge to reflect more the diversity of cultural development in Africa, Asia, and the Americas. New literacy curricula stress the importance of examining oral and written language forms like the requirements of a show-and-

tell speech and different people's ways of expressing themselves (Delpit, 1988; Heath & Margolies, 1991). Such advancements underscore the urgency of bringing children's backgrounds into the classroom. The proposal in this paper builds upon these ideas to suggest that children themselves have a role in determining what counts as their culture. By inviting children to bring into the classroom discussion examples of various media and symbols they find interesting in forms they find accessible and appealing, the curriculum can be dynamic and responsive to children's cultures. In this way, teachers can ground literacy instruction in children's own worlds as the basis for learning about other worlds.

Images, Sounds, and Conversation

Many children who fail to learn to read and write are skilled at gleaning information from nontextual sources including real-life experiences, speech, and television. Similarly, some children who have difficulties expressing ideas or details in writing draw very detailed pictures that express coherent themes and points of view (Dyson, 1989). And some children with excellent oral language skills do not readily transfer those skills to written language, in part because oral and written language differ in so many ways. Previous theory and research suggest that visual and aural media can support reading and writing.

When visuals like pictures and maps accompany a text, the text is easier to comprehend if the contents of pictures and text are related (Kozma, 1991; Levin & Lentz, 1982). Similarly, children develop ideas more fully and with more linguistic complexity when basing their writing in visual prompts than when writing from memory (Golub & Frederick, 1976). Images must, however, be meaningful to children in order to be helpful writing prompts (Golub & Frederick, 1976). The importance of personal meaning in this research supports the idea that images collected by children might be good resources for their own research and expression.

Images and sounds can act as springboards for written expression because they serve as sources of information and as concrete reminders of experiences, values, and goals. Images capture aspects of culture, social structure, and emotions that are difficult for unskilled readers to infer from text or unskilled writers to put into text.

Nuances of phrasing and implied messages are inaccessible to children who have limited comprehension or composing skills or background knowledge that differs from what is assumed by a text. The simple, still image is especially rich as a concrete source of data and reference points. An image captures reality and freezes it for examination and reflection (Arnheim, 1969). In addition to providing facts, images are open for the viewer to connect the elements and interpret from his or her own point of view, a factor that leaves room for diverse perceptions.

If images are worth a thousand words, then music fills the spirit. Music is a medium that can provide a source of grounding, details, and inspiration. There is little previous research on the role of music as support for writing development, but music and nonspeech sounds provide stimuli that can be captured intuitively like visuals, rather than through analytic procedures.

Children have to do something with images and sounds in order to benefit from them as prewriting resources. Conversations and writing about images and sounds can help children construct stories, explanations, and interpretations. In order to progress beyond simply making multimedia collages, children need encoding and other production skills; but research shows that the majority of children have such basic skills (Applebee et al., 1990), yet lack strategies for developing ideas in writing—a complex construction process. Children can be helped to reflect critically on the contents of the images and sounds they find appealing as a way of further developing their own points of view and as preparation for comparing and contrasting their own values and thoughts to those of other people.

A Multimedia Approach

Multimedia composing is a way of approaching written language development. The end point of multimedia composing is a text that stands on its own, but many nontextual as well as textual supports are available to writers as they create the text. Multimedia composing involves gathering information from various concrete sources and expressing ideas with various media as a prewriting activity. The tools of multimedia composing in kindergarten are markers, paints, construction paper, conversation, stories, games, and a myriad of other resources. These same tools can be used by fourth, sixth, or even tenth graders, but sever-

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al characteristics of the computer make it an appropriate work space for multimedia composing by older children. First, several media can be integrated in the computer—the young writer's composing screen can include moving or still images, a button that can be pushed for sound, and several sections for text. In addition, electronic drawing, cutting, and pasting tools allow the child to transform images, sounds, and texts. Such integration of media makes a concrete context for repeated work and gradual creation of text. Because the media are integrated in the computer, children and teachers can work together on the computer as tools for thought and conversation as well as the end products of their efforts. The multimedia composition in Figure 1 was created in a program (Daiute & Johnson, submitted for publication) on a Macintosh computer. The child who made this composition entered into the computer this picture of Shadow Cat, one of her favorite fantasy characters. The child then wrote something about Shadow Cat and entered an excerpt of a song by Stevie Wonder into the computer. (Clicking on the icon of the speaker plays the sound associated with the image and text on the screen.) Then, listening to the sound she had pasted, the child added the sentence, "She likes slow music." Later, the text from this composition could be electronically cut and pasted to a blank screen; and the child could try to make it stand on its own, with the multimedia version readily available for consultation.

In addition to such storage and production tools, the computer is a publication machine. The ability to create and mass produce newspapers, books, and other written materials on a computer provides children with tools for creating texts

that represent their backgrounds and interests, since much of the professionally published material does not. By making and distributing such publications, children create their own literary communities in which they have positions of power such as Writer and Editor. Sharing responsibilities also means sharing the production tools so one computer can satisfy the needs of a large number of children.

Finally, the computer allows children to create and edit. Children have a much easier time producing text and finding simple errors in their writing on the computer than in their handwritten texts, and they like writing a great deal when they can work on this tool (Daiute, 1985).

This multimedia approach addresses writing as a complex process, including cultural, social, cognitive, emotional, and personal aspects of the child's life. When children have the autonomy to select their own images and sounds for examination in school work, their own cultures, values, and interests become part of the curriculum. In this way, images and sounds offer familiar contexts and symbols as the basis for academic work.

A Multimedia Composing Project

To find out about the appeal, feasibility, and value of multimedia composing in the classroom, my students and I designed a descriptive study with several third/fourth-grade teachers. We worked with six 10-year-old children with writing problems and two of their higher achieving classmates over a 6-week period. These children went to a desegregated, open school in a Northeastern city where the teachers have prepared a challenging curriculum that integrates all subjects around projects like a simulated archeological dig and creation of a museum. These 2-month projects combine subject matter in social studies, language arts, science, and mathematics. For example, children created Mayan artifacts to scale for their simulated Mayan Museum, wrote and illustrated Mayan-like myths, and designed comics that would tickle the Mayan sense of humor. Thus, the use of diverse forms of expression was not a novelty in this setting. Integrating media on the computer and using images and sounds as prewriting tools were logical extensions of the work these children had been doing all year. Such integration may be crucial for the success of multimedia composing in helping chil-

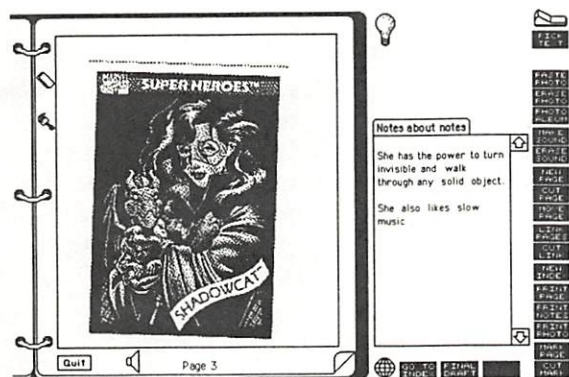


Figure 1. Multimedia Composing

dren who have difficulties transferring across media.

Our project involved doing modern-day anthropology in this context of studying the Mayan civilization. We told the children that some day, people would want to know about their culture, and they were the best ones to offer valid information. The purpose of their project was to create a book about the interests of young people in their city in 1991. We asked the students to create their own libraries of images and sounds about topics that were "interesting, fascinating, and/or confusing" to them. After giving the children basic instruction on how to take photographs and record sounds, we loaned them

Once show-and-tell has disappeared from the classroom routine, children's personal cultures tend not to be invited into the classroom as a basis for reflection and growth.

Instamatic cameras and tape recorders which they could take for several days to gather pictures and sounds in their neighborhoods, at the school, or other places in the community. The children selected at least four visual items (photographs or flat objects like candy wrappers and baseball cards) and one or two sounds. They then entered these into the computer to build a multimedia library. We asked the children to work together to create this library to encourage collaborative reflection about the images as representations of their culture. In addition, we had several group meetings to discuss procedures and to decide on important aspects of the book, such as the contents of different chapters and the title.

Over the course of 3 weeks during class time and recess, each student used the Personal Media Studio for five to eight sessions of 45 minutes. Students worked individually at a computer and were free to interact with the researchers and other students as needed since we assume such work is best done in a social context. We took field notes to capture all comments reflecting students' motivation, students' questions, problems, and peer interaction. We have done detailed analyses of 3 children's multimedia composing proc-

esses and multimedia compositions for insights about whether and how children used images and sounds to support their writing. We wanted to find out whether multimedia composing supported children's text composing or simply diverted them from writing and how children used diverse media as sources of knowledge and expression. Three children with different types of writing problems tapped the resources of multimedia composing in different ways.

A Reluctant Writer Hits His Writing Stride

Jamal is a 10-year-old African American boy with a warm smile. Jamal was recommended by his fourth-grade teacher as a student who might benefit from multimedia composing because he had serious writing difficulties. Jamal's school records reported that he has language processing and motivational problems, with specific disabilities in writing. His writing did not conform to written conventions of spelling and punctuation, and it was sparse, including very few details. The report also indicated that Jamal had been suspended from school the year before and often had been in trouble because of his social prowess. A multisensory approach had been recommended for Jamal, and this involved mostly oral and written repetition of directions and words. The reading specialist said that Jamal had done well in the drills in the resource room, but these skills did not transfer to his work in the classroom.

Jamal's own report indicated that he likes video games, sports, and writing, and he used the multimedia composing experiences to bring his interests into the classroom. He created a multimedia context with personally meaningful symbols, and his writing became more complex in specific ways. Most of the images and sounds Jamal brought into the project and used in multimedia compositions included African American males as subjects. These males were depicted as skillful and social in some way—the values Jamal had expressed in the one other story he had written all year and in his interviews. For example, in his piece about M. C. Hammer, Jamal wrote that he did not like M. C. Hammer—"He is dom," not conforming to Jamal's values. And Jamal explains why other people do like M. C. Hammer, reflecting his social awareness. (See Figure 2.) As further expression of his disapproval, Jamal drew a beard over the computerized image of M. C. Hammer and commented that he made him look

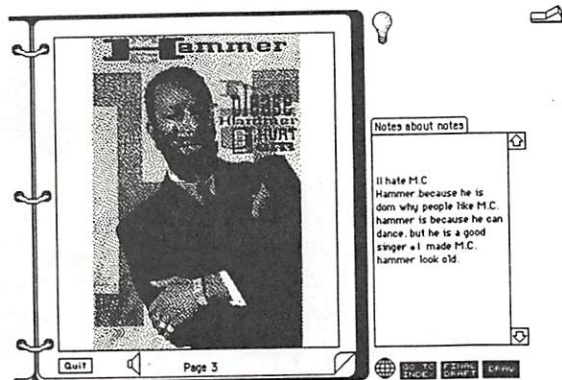


Figure 2. Jamal's M.C. Hammer

old. Finally, Jamal pasted an excerpt of M. C. Hammer singing and, after listening to the piece, admitted that he does sing well. Thus, M. C. Hammer has a demonstrable skill that seems to pass Jamal's critique. Jamal's interests centered around people—skilled people and people like him. When grounded in his world, he did not have a problem writing with details.

In multimedia compositions, Jamal found new ways to develop his writing. He grounded his texts in the sociocultural context of the image, and he used the images and sound as springboards for elaborating beyond concrete details. Because the multimedia composing context offered many supports, we cannot identify one specific factor that made the difference for Jamal. He collected generously from the cultural, visual, musical, and human resources in the multimedia composing context. What this work shows is that Jamal can do the job of writing when he has support. Jamal still had troubles with spelling and punctuation in these texts, but since he was developing his ideas, this may be an excellent context in which to work on those skills.

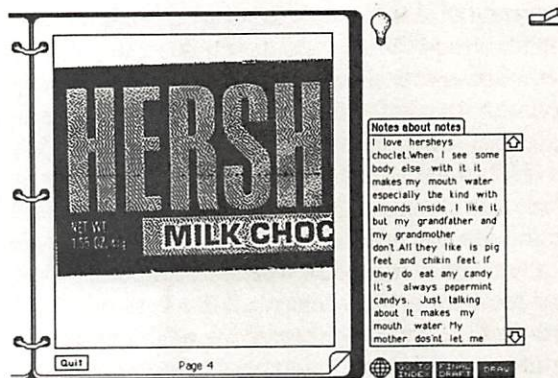
A Child with Writer's Block Engages Her Voice

Keisha is a 10-year-old African American girl in third grade during the project. Keisha is friendly, enthusiastic, and exuberant when she feels good about her work. Keisha's teacher recommended her for this project because she had not written anything "original" all year. In kindergarten, Keisha enjoyed listening to stories and loved the art corner. "Keisha is a very verbal child," her report stated. She was asked to repeat first grade because she developed problems coping with school and expressing herself. In second grade, Keisha had trouble writing from her own experi-

ence, but she still loved the art corner. And her third-grade teacher reported Keisha's tendency toward copying from other texts. In short, Keisha had writer's block.

Keisha found that she could use visuals as springboards to her newly discovered creativity while she had previously used the method of copying others' texts. Keisha wrote seven multimedia compositions, reflecting several different types of originality. For one, she used an image from the front of a Marvel card and copied the text from the back. Then she took a giant step by writing "I think he's fresh" when the researcher encouraged her to say how she felt about the image, rather than simply copying.

This social support helped Keisha put into practice a new way of thinking about writing—writing as she speaks. Keisha also used the images and sounds for extended original pieces that elaborated upon the image in interesting and varied ways. In Shadow Cat (see Figure 1), Keisha wrote about this heroine's powers and added some character elaboration about the type of music she likes. While this piece and the Punisher piece seem rough and context dependent, several of Keisha's multimedia compositions reflect a creative flair. For example, in her Hershey piece, Keisha built on the simple image of a Hershey bar wrapper (see Figure 3). From the starting point of the candy wrapper, Keisha wrote about her love of *choclet*, her sense experiences with chocolate, and the role of chocolate in her fami-



Complete Text of Keisha's Hershey Piece

I love hersheys choclet. When I see somebody else with it it makes my mouth water especially the kind with almonds inside . I like it but my grandfather and my grandmother don't. All they like is pig feet and chikin feet. If they do eat any candy it's always peppermint candies. Just talking about it makes my mouth water. My mother don't let me eat that much candy because it's bad for my teeth but My Dad give it to me. Evry time my oldest Brother has some he never give's me none because hes so cheap.

Figure 3. Keisha's Hershey

ly—yielding an anecdotal family album. She contrasted her feelings about chocolate to those of her grandparents who like *pig feet* and *chikin feet* and *pepermint*. Keisha also worked her brother, who does not share his candy, and her dad into this elegant piece.

With this work, Keisha began to take the risks of exploring a variety of perspectives and creative techniques in her writing. She described,

Some children who find reference points in the classroom may thrive even though they leave their music and skateboards at home, but other children need such symbols to make connections to school.

but she also created character sketches and often introduced conflicts as she did by expressing different opinions about chocolate bars. Employing favorite textual material need not be a drawback, but a writer needs to develop skills for doing this in such a way that transforms others' material. Keisha can accomplish the conceptual and linguistic work involved in taking leaps from familiar contexts. In fact, her original writing reflects a strong sense of language, imagination, and analysis. Imagery was a source of grounding that Keisha needed to face writer's block. An image leaves so much unsaid that Keisha was able to use it as a springboard for her talents while written sources held her back.

An Impulsive Child Completes Writing Tasks

Ten-year-old Luis is an impulsive boy who typically cannot focus on a task, so he rarely completes his writing assignments and does not use his skills. Luis is a bilingual boy of Hispanic origins in the fourth grade during this project. Luis's father, born in Puerto Rico, is a factory worker; and his mother, born in the Dominican Republic, is a unit leader in a factory. School records describe Luis as having a specific learning disability and being of high-average ability but performing only at an average level. Luis's specific difficulties centered in affective/behavioral areas, including impulsivity, distractibility, outbursts of anger

when frustrated, and low self-esteem. Luis was having problems with writing and fine motor skills. These problems converged to inhibit him from completing work in school and from using his abstract reasoning ability and spatial skills, which were noted as his strengths.

Luis's multimedia compositions reflect a masterful channeling of energy, using these tools vigorously to overcome some of the problems noted in his profile. As he switched from selecting and scanning an image to drawing on it, writing about it, changing a drawing, and selecting another image, Luis integrated ideas and text. He shifted among visual, aural, and textual media to complete writing assignments, rather than shifting from one incomplete assignment to another. Luis completed seven compositions—more than he had all year. These compositions were short, but they were integrated and complex.

Luis's energy is reflected in the content of his multimedia compositions as well as in his composing process. Luis chose several images with energetic content, including an action shot of a basketball player, a fast car, and a cover of an action video game. As shown in Figure 4, Luis comments on the subject's physical skill. The characters in two of Luis's other pieces also include symbols related to physical strength—weapons and being able to lift many tons. As illustrated in his text about Frank (Figure 4), Luis used exclamation points—conveying an emphatic, energetic tone in his writing. Children need to learn how to make words convey such excitement rather than relying on exclamation points to do the job; Luis tried to put energy into his words through dialogue, description, and devices like exclamation points.

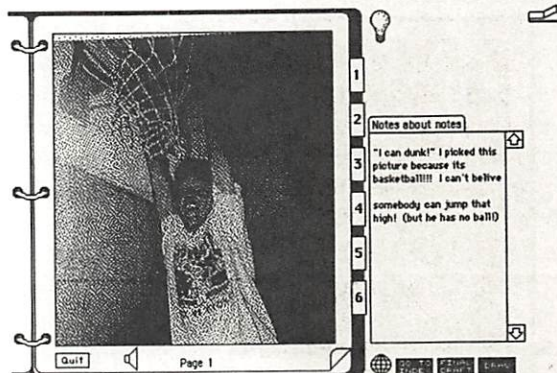


Figure 4. Luis's Frank

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Several other pieces that Luis composed indicated that he used the personal media context to explore and reflect issues of self-esteem. In those pieces he referred to himself positively, suggesting that he could use multimedia composing to explore affective issues.

Luis also explored content closely related to the class's academic work. An unusual but promising piece from an academic point of view is Luis's Mask, shown in Figure 5. In this piece, Luis gives some history, an explanation of the value of the image for him, and even a citation.

Luis's own design for his multimedia composing makes the point that he can use activity as an asset to writing. The multimedia context provided Luis with tools for tailoring the writing process to his own style, needs, and strengths. He moved—for the most part productively—among the many tools available in this environment—images and sounds, image-processing tools, drawing tools, sounds, word processing, on-line prompts, and social supports of adults and peers. Being able to engage his spatial skills such as reading and altering images also appears to have provided support for Luis's weak writing skills. In addition, if working with ideas across media helps children delve deeply into ideas (Bruner, 1966; Vygotsky, 1978), then the type of energetic media sampling Luis did may have been helpful for integrating ideas. The coherence of Luis's texts and the personal theme of self across his multimedia compositions indicate that all this flipping among media was not aimless. In fact, such movement, which may have disoriented other children, seemed to be a prewriting strategy for Luis. Allowing an impulsive child like Luis to work with his impulses in this way, rather than against them, seems worthy of continued study in the classroom.

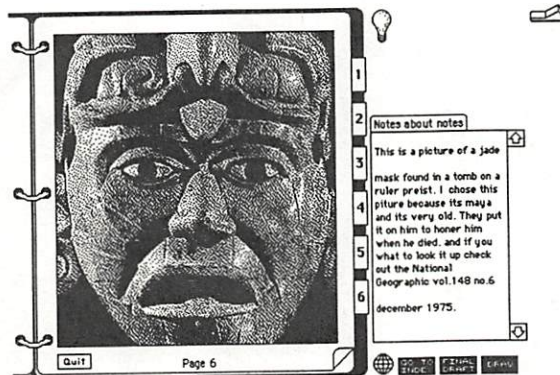


Figure 5. Luis's Mask

When a child's style seems unlikely to change in any dramatic way, children may need supports and tools to turn their "limits" into strengths.

In summary, Jamal, Keisha, and Luis each created his or her own multimedia composing process—using contexts, symbols, and processes that drew on their strengths. Continued work with multimedia composing will explore the value of this approach for these and other children.

Continued Work with Multimedia Composing

Our continued work with multimedia composing will put these findings to more long-term tests. The activities we have done thus far have been helpful in identifying children's strengths with nontextual media, with contexts, and with symbol systems that are personal and not typically available for writing in the upper grades. We plan to explore the use of multimedia composing as an aid in diagnosis to find out whether we can identify profiles like those of Jamal, Keisha, and Luis for other children who have serious writing difficulties. It appears that allowing children to use a variety of resources helps identify diverse methods of creating contexts for writing, for doing research, and for expressing themselves. If this is so, we should be able to apply this approach to develop diagnostic recommendations for teachers.

As we explore further the power of multimedia composing for diagnosing children's strengths that can apply to writing, the role of multimedia composing in instruction is also relevant. The children described here did multimedia composing for 5 weeks and found new ways to approach writing, so the longer term value of this approach is worth researching. Continued work will study children's abilities to transfer the strategies they have acquired from multimedia composing to their text composing. In most cases, children will need explicit suggestions about how to build on multimedia composing activities, and such strategies will have to be developed as we respond to children's needs during the course of composing. For example, Keisha may be able to internalize a strategy of making a mental picture as a prewriting technique. She may need to do some work relating concrete images to mental images and strategies on how to create mental images. Based on Keisha's excellent memory for story plots and other schemata she "copies," she should be able to hold images in mind and work from them as

prompts. On the other hand, multimedia composing may serve as a prosthetic device for a child like Luis who continuously needs myriad tools at hand for channeling his energies. Work with a smaller set of tools may help him find a balance between internal and external supports. Removing multimedia supports from Luis may again involve fighting against his impulsivity, which may be a fact of life for him. Nevertheless, continued work on control strategies and an effective use of various physical and cognitive supports are worth exploring in Luis's instructional program.

Further explorations around multimedia composing should also address relationships among visual media, peer culture, and literacy. Especially important are the relationships between the media and symbols in children's lives and the work they do in school. The work of school-based literacy tends to have a set of cultural values attached to it, but children bring their own values to school. Educators must try to understand how different sets of values interact in the challenging work children do to master reading and writing, which are not value-free tools in process, purpose, or content.

Finally, it seems that trying out some of these ideas in low-tech form may be worthwhile. The computer is optimum for reasons described above and in addition because it is itself a symbol to which many children are attracted. Children report that they work better and enjoy working more when they can use the computer, but not all schools have scanners, digitizers, or even computers. The work in many kindergartens attests to the fact that multimedia composing does not require high technology, but the feasibility of using the approach with older students requires continued research.

Conclusion

This research on multimedia composing is far from conclusive, but it does offer an insight that can be useful to any classroom teacher, whether or not computers are available. Rather than focusing so intensively on children's weaknesses, we can explore their potential by allowing them to work with visual and aural media as sources for text. With this approach, children's writing improved in production, fluency, complexity, and control over written voice. Although each child in our case studies experienced new successes in writing when he or she was allowed to work in

multimedia contexts, there were also some problems that this approach did not address. It did not, for example, help with spelling. Nevertheless, because of the other advances that were made, this context might be a good one in which to embed work on spelling.

We already know from process writing that children's experiences can fuel much earlier development of writing than was ever before imagined (Calkins, 1986; Graves, 1982). We have also seen that children have different pathways to literacy (Dyson, 1989). I argue here that children's skills with various media and symbol systems should be the basis for their writing. Children in the upper elementary grades who have writing difficulties and do not respond to treatments focusing on their disabilities may need another approach. In this approach, we focus on children's penchants—even when these penchants are also disabilities. These disabilities are ways of knowing and working that may provide inroads to text.

Educational philosophies based on diagnosing and treating children's weaknesses could be broadened into a philosophy based on the idea that sometimes weaknesses can be strengths. For example, Keisha's problem is that she works too closely from others' textual models. Keisha also worked from a model in this study, but since it was nontextual, she was able to use it as a resource rather than a crutch. Luis's problem is that he is impulsive. He was also impulsive in his work in this project, but he used his impulsivity in a creative way.

This approach may be easier for resource room teachers to implement than classroom teachers who have 25 or more children. Allowing children to do multimedia composing may be an interesting device for developing student profiles. With children of many different backgrounds in our classes, we have to help them find ways to make literacy their own. As kindergarten teachers know, children express themselves in many ways. We have to help children stay in touch with their preferred ways of working and find new meaningful ways of working as they progress through school. Simply giving pictures or tape recordings is not the answer because the symbol systems must belong to children. One way to help them keep in touch is to allow them to draw on their own cultural and personal resources. As Keisha and Luis said in their final interviews,

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having pictures helped them get ideas, but it was very important to them to select their own pictures. Keisha was dismayed at the suggestion that someone else might select pictures for her to write about because someone else might select "like maybe a colonial person or maybe Abraham Lincoln or something." Luis explained that "when you choose your own pictures, the teacher . . . not going, hey, this is too wild. Pick that up. I want that picture of the geography book. Hey, geography's for sissies."

One final note of encouragement for teachers is that this boy who said that geography is for sissies became fascinated with geography, history, and the culture of the Mayans in part through pictures and maps—pictures he had selected from among classroom materials provided by his teacher. And this tough kid even wrote about geography in his Mask piece—a piece that could be the beginnings of good academic writing.

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